it superior to carbolic and salicylic acids in destroying the bacilli of the disease.

Sulphuretted hydrogen has been tried by Cantani in the form of inhalations in phthisis, and this observer has claimed good results from their use, but its antiseptic value is far less than sulphurous acid. The possibility of its oxidation while passing through the body, whereby its efficiency may be increased, should be kept in view.

As the germicidal value of the gas as it enters the body seems so far to have been assumed rather than demonstrated, the following experiments bearing on this point were instituted.

EXPERIMENTS.—A pure culture of the tubercle bacillus was mixed with two cubic centimetres of sterilized water in sufficient quantity to render the liquid quite opaque, and through this eight litres of gas precisely as taken by the patient were slowly passed by being directed to the bottom of the test-tube through a finely drawn glass pipette. This quantity of carbonic acid is the largest amount that can be used at one treatment, and it was forced through an entire bottle of Eaux Bonnes mineral water moderately heated in order to insure its being thoroughly loaded with the sulphuretted hydrogen. The quantity of sterilized water in which the germs were suspended was so small that as the gas slowly bubbled up through it, they must of necessity have been brought in contact with the entire quantity of the vapor used.

After the operation had been completed, the bacilli were planted in six tubes of coagulated blood serum, and together with two control tubes containing plants made from the same germs prior to the experiment, were all put in the thermostat together.

The remainder of the liquid, containing the microbes which had been subjected to the action of the gas, was taken up in a Koch's inoculating syringe, and injected in the right pleural cavity of two healthy rabbits. Precisely the same experiment was repeated two days later, except that the Richfield water was substituted for the Eaux Bonnes.

In two weeks fifteen out of the sixteen tubes showed an abundant growth of tubercle bacilli.

The four rabbits died on the twenty-sixth, twenty-eighth, thirty-first, and thirty-second days, respectively, and all showed small, cheesy masses in the injected lung, and miliary tubercles scattered through the spleen, liver, pleura, and peritoneum.

The rather unusal rapidity with which death was produced in these animals was no doubt due to the large number of bacilli injected. As the tubercle bacillus, however, is a spore-forming organism, and for this reason most difficult to destroy, and as other bacteria play an important part in the destructive and septic processes of advanced phthisis, the effect of the gas on some of these germs was tested.

The bacterium of blue pus and the staphylococcus pyogenes aureus, were selected for this experiment, as they are both intimately connected with the lesions found in the lungs of consumptive patients. These organisms form no spores, multiply by fission, and are, therefore, more susceptible to the action of chemical substances than the tubercle bacillus.

Pure cultures of the bacterium of blue pus, and the staphylococcus pyogenes aureus were each mixed in two separate tubes, with 2 c.c. sterilized water, and through each tube of the fluid, made appreciably turbid by the microbes, 8 litres of the gas were passed exactly as in the foregoing experiment, the Richfield spring water being chosen. Ten of the twelve agar tubes, planted with the organisms thus treated, showed an abundant growth of both varieties of bacteria in less than three days.

The gas, therefore, as it enters the body appears to have no germicidal value whatever.

A satisfactory conclusion as to the real therapeutic merit of this method, cannot necessarily be reached for many months to come, but so far as the evidence procured by its application to one case for so short a time may be of value, it would seem that rectal injections of gas by Bergeon's method have a beneficial influence on the suppurative processes of phthisis. The method seems deserving of a most thorough and extended investigation, and *though the treatment may prove in the future to be a useful therapeutic measure, a consideration of the facts here presented does not in the least warrant the assumption that a specific for tuberculosis has been discovered.*

A NEW COLOR-TEST (ROUX'S) FOR THE DETECTION OF THE GONOCOCCUS;

WITH REMARKS ON ITS PRACTICAL IMPORTANCE.

BY EDMUND C. WENDT, M.D.,
OF NEW YORK.

FOR the past three years the relation of Neisser's gonococci to gonorrhœa has been engaging my attention. My studies were pursued with the view mainly of adding to our clinical knowledge of the subject, and were carried on conjointly with Dr. Charles W. Allen, of New York. I was early struck with the difficulty, if not the impossibility, of differentiating the microbes of blennorrhœa from similar diplococci.

Like other observers, I was unable to confirm Neisser's statement regarding the characteristic appearance of the specific micrococci of gonorrhœa. And, indeed, it is now generally admitted by those most competent to judge, that the gonococcus is not sufficiently well characterized by its morphological attributes, to admit of our establishing its identity. Again, while it is quite true that, in most cases, the peculiar intracellular grouping of the gonococci will render a diagnosis highly probable, nevertheless, I cannot allow to go unchallenged the claim of Bumm, to the effect that this constitutes a truly pathognomonic sign. Among about one thousand specimens, of various secretions examined, I have several times observed this alleged pathognomonic arrangement of microbes within the pus-corpuscles, although gonorrhœa was quite out of the question.

It was not until I had become thoroughly acquainted with Roux's color-test for gonococci, that I felt confident that blennorrhœa could be diagnosticated with certainty, by the aid of the microscope. The method of Roux was made public at a meeting of the Académie des Sciences, held November 8,

1886. After a considerable number of experiments, I am able to state my belief that it is a reliable one. The method itself is based on the peculiarity of gonococci to hold aniline colors only very loosely, and to become speedily decolorized when subjected to the action of ordinary reagents for that purpose. Although Bumm has found and described no less than five different kinds of diplococci,[1] it does not appear that any but the true gonococci retain aniline colors so poorly as to almost immediately fade from view in the presence of decolorizing fluids. On the contrary, by employing the method of Gram, the ordinary bacteria, as is well known, appear deeply stained. But in a given specimen stained after the manner of Gram, all gonococci invariably disappear, even more quickly than do the anatomical elements thereof.

It appears that Gram's solution of iodine and iodide of potash, so far from fixing the aniline color upon gonococci, as it does upon the other schizomycetes, causes them to give up the stain previously imbibed.

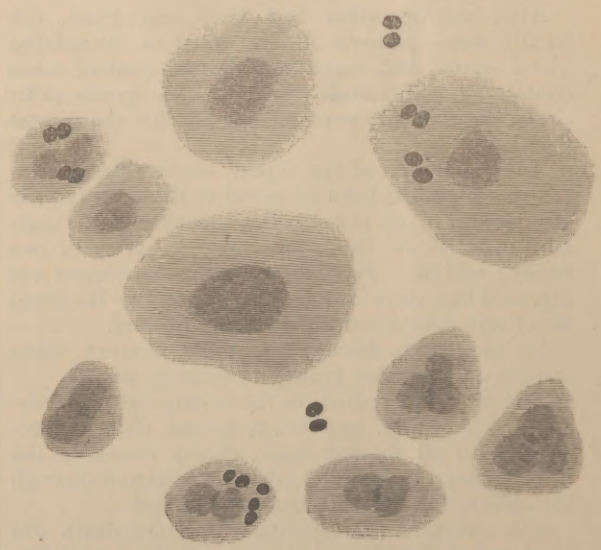
I will now describe, step by step, the method of procedure which I have found to yield the best results, and which differs in no essential respects at least, from that advocated by Roux, to whom is due the credit of having first applied it for purposes of differential diagnosis. The material to be examined is spread in a thin film upon a glass slide by drawing a second slide over it. It is then allowed to dry at the ordinary temperature of the room.[2] The specimen is next stained by one or two drops of a saturated solution of methyl-violet in aniline water. Twenty to thirty seconds are amply sufficient to accomplish this purpose. After washing in distilled water, and placing a cover glass on the slide, it is ready for the first examination. The gonococci are found deeply stained, precisely like all the other microörganisms present in the specimen. The cover-slip is now removed, Gram's solution of iodine in iodide of potassium (iodine 1 part, iodide of potassium 2 parts, distilled water 300 parts) is poured upon the slide and allowed to act for three minutes. After again washing in water, absolute alcohol is poured over the specimen and quickly removed by a gentle stream of water. The cover-slip is now replaced and the specimen submitted to a second examination. This procedure brings out ordinary bacteria in so strikingly beautiful a manner, that it has been called by Friedländer "nearly ideal." But while this is true of microbes in general, the gonococci are found to have disappeared.

In typical gonorrhœal pus from the male urethra the gonococci exist in such abundance as to overshadow by their presence all other microörganisms. While the intracellular grouping of the microbes is certainly characteristic, that sign alone should not be relied upon in making a positive diagnosis. But if, in addition, the bacteria disappear on the application of the above method, it is safe to assume the presence of blennorrhœa. If, on the other hand, these microörganisms persist, the inference is justifiable that they are not gonococci, even though they should occur in groups within the cells.

FIG. 1.

Usual appearance of the discharge in acute gonorrhœa. A. Intracellular group of gonococci (pathognomonic according to Bumm). B. Extracellular group of gonococci. C. Urethral epithelium containing gonococci. Schematic.

FIG. 2.



Usual appearance of discharge in "nearly cured" gonorrhœa. Schematic.

I have not found it necessary to employ eosine as a contrast-stain, as recommended by Roux. But there is no harm in its employment, and it facilitates focussing in those cases where only gonococci exist in a specimen. The eosine always causes the anatomical elements to reappear with a faint rosy hue, the gonococci also assuming a very faint color. The other bacteria remain purple, and thus a double coloration appears. But it is necessary to have some experience with the use of eosine, or the specimen will be spoiled. I employ an alcoholic solution,

[1] These diplococci were obtained from various sources, such as ordinary atmospheric air, the preputial smegma, the discharge in acute vaginitis of children, etc. They are all accurately described in the second edition of Bumm's work, entitled "Der Mikro-Organismus der Gonorrhoischen Schleimhaut Erkrankungen, Gonococcus Neisser," Wiesbaden, 1877.

[2] I have come to discard the use of heat for drying specimens of gonococci, since their shape is better preserved without passing the glass-slide through the flame.

and allow it to act about one minute. On the whole, I do not regard it as necessary for purposes of diagnosis.

If the experience of others will be found to substantiate, as Dr. Allen's and my own has done, the claim to absolute accuracy made for his method by Roux, then I doubt not a decided step in advance will have been taken. Those familiar with bacteriological methods know only too well how difficult it is to obtain the supreme proof of the etiological significance of the gonococcus by the implantation of pure cultures. Thus so able and competent an observer as Sternberg was compelled recently to admit (The Medical News, February 26, 1887) that he had mistaken a non-pathogenic culture of diplococci for one of the true gonococcus, and that, therefore, the negative outcome of his inoculation experiments was devoid of significance.[1]

Bumm himself only succeeded after many futile efforts, and according to him the gonococcus grows well, outside of the body, only upon human blood-serum. Moreover, in our country it would be difficult to find healthy men or women who would submit to having their sexual organs tampered with to the extent of artificially producing, or attempting to produce, a typical gonorrhœa. In Germany there appears to be no lack of "human material" for the experiments of the enterprising mycologist. As gonorrhœa cannot be produced in animals, we must either depend upon microscopical evidence for purposes of diagnosis, or go without. It is for these reasons that the new color-test described above will be welcomed by the practitioner as placing within his reach a ready means of deciding positively as to the true nature of a discharge.

A word of caution is perhaps necessary here. Granting the absolute reliability of Roux's method as applied to intracellular groups of diplococci, it does not follow that the presence, in a suspected discharge, of the microbes of gonorrhœa must result in a communication of disease under favoring conditions. It does prove the infective capacity of a secretion just as positively as the absence of the gonococci proves the opposite. But that is all. It is a well-known clinical fact that exposure to infection does not always result in an attack of the particular disease in question. This is eminently true of gonorrhœa. I have observed cases of married men whose urethral discharges always showed gonococci, but whose wives remained healthy and gave birth to children showing no sign of ophthalmic blennorrhœa.

But it is also true that men with a minimum of discharge containing gonococci have communicated the disease to others. I have never known a case in which infection resulted in the absence of gonococci. And again I have seen a few cases in which all the clinical symptoms of gonorrhœa were present, but in which the abundant creamy discharge contained no gonorrhœal microbes. In these cases recovery resulted in from two to six days, by letting things alone and ordering a placebo. These are doubtless the cases that appear in literature as "cured" by some "original" or novel plan of treatment. A systematic microscopic examination of all suspected secretions will soon dispel all such illusions. True gonorrhœa is never "cured" in less than four weeks. In many cases the process is of much longer duration. At least this has been my experience with the disease. But true gonorrhœa is not a benign urethral catarrh, it is a virulent inflammation due to bacterial invasion. This should be generally recognized by the profession, for there still prevails in our ranks much looseness of conception regarding the true nature of the disease, coupled with a disposition to shirk the responsibility which modern methods of bacterioscopy have entailed upon every earnest, honest, and well-meaning practitioner.

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[1] See Sternberg's articles in The Medical News, of January 20, 1883, and October 18, 1884.

REPORT OF A CASE OF IMPERFORATE HYMEN,

WITH SEPTICÆMIA BEFORE AND AFTER THE OPERATION FOR ITS RELIEF.[1]

By C. O'DONOVAN, Jr., M.D.,
of Baltimore, Md.

In reporting this case, from the service of Prof. Wm. L. Howard at the Hospital for the Women of Maryland, I wish to call the attention of the Society to the pulse and temperature range of the patient, rather than to the operation itself for the removal of the imperforate hymen, as it shows that for an indefinite time before and for a period of more than six weeks after, this girl suffered from the septic influence of chronic blood-poisoning; and that it was only by very careful nursing combined with the assiduous administration of remedies to meet the recurring elevation of temperature and frequency of pulse, that she eventually emerged from her dangerous situation. This will become more apparent as I read the history of the case.

C. S., aged fifteen, white, entered the Hospital for the Women of Maryland, on November 19, 1886. She came from Harford Co., Maryland; and had been seen by physicians before leaving home, who had correctly made the diagnosis of imperforate hymen with retained menstrual blood. She was very pale and anæmic in appearance, miserably thin, and showed no external evidence of the development usual at puberty. She was extremely nervous and irritable, so much so that no satisfactory examination could be made until chloroform had been administered. Her temperature was not taken before the operation, but her pulse was always frequent, varying between 96 and 120, and changing markedly during any prolonged observation, due most likely to her nervous irritability. She had never seen any external sign of menstruation, but at irregular intervals, of late more frequent and more regular, she had felt severe pains in her abdomen and back, at which times her condition would become much more serious. When she was thoroughly relaxed by chloroform, a tense cystic tumor could be felt above the

[1] Read before the Baltimore Gynecological and Obstetrical Society.